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EUREKA: The West European High-Technology Initiative

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An Intelligence Assessment

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November 1985

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An Intelligence Assessment

This paper was prepared by [redacted] Office
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**EUREKA: The West European
High-Technology Initiative**

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Key Judgments

*Information available
as of 25 October 1985
was used in this report.*

EUREKA (European Research Coordinating Agency)—proposed by France in April to coordinate West European high-technology research—is off to a slow start. Although all West European governments applaud the concept, three issues still must be settled:

- West European governments must agree on an institutional framework for the program. EUREKA almost certainly will be placed outside the EC because West Germany, France, and the United Kingdom want to control the program, bypass the heavy EC bureaucracy, and ease the entry of non-EC countries. Italy, Spain, and the smaller EC countries, however, probably will insist on at least a limited EC role.
- Funding will be tight because research budgets already are strapped. Governments are looking to industry for support while companies are looking to governments for financial incentives to join the program. EUREKA is likely to end up competing with national and EC programs for limited research funds.
- Disagreement on EUREKA's aims almost certainly will complicate the selection of projects. West European governments want to prevent a widening of the "technology gap" separating Western Europe from the United States and Japan. Paris initially emphasized research areas with direct military applications to prevent a "brain drain" of scientists to the US Strategic Defense Initiative (SDI). Bonn and London share French concern about the "technology gap" but are trying to steer EUREKA away from areas that appear to compete directly with SDI. The French have been accommodating on this point and have broadened the proposed research areas in order to get EUREKA going, but SDI is still a strong motivating force for them.

We believe Western Europe eventually will settle on a loose structure for EUREKA that will allow governments and companies to choose the projects they wish to join. The program is likely to concentrate on the civilian commercial application of advanced technology in such areas as microelectronics, factory automation, computers, and lasers. It probably will entail an initial phase focusing on less than 10 projects.

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Even if all efforts are made to keep EUREKA and SDI separate, some competition for intellectual and capital resources appears unavoidable. The degree of this competition depends on whether West European governments are satisfied that their companies can achieve commercial spinoffs from the technology that emerges from SDI—particularly the technology West European firms develop. If they believe they cannot, government interest in and support for EUREKA almost certainly will heighten. Several West European firms have expressed interest in EUREKA, but they generally remain skeptical about it and more interested in SDI research because they perceive a firmer financial commitment behind the US program.

EUREKA's prospects for advancing West European technology are dimmed by the mixed results of past attempts at West European research collaboration, which have been hampered by parochialism on the part of governments and companies. The funding issue, furthermore, is likely to become a yearly struggle as officials try to make EUREKA fit their governments' priorities. Even if EUREKA does result in new technologically advanced products, its success still will depend on the ability of Western Europe to create a large integrated market.

General Secretary Gorbachev has given EUREKA a guarded commendation, probably because he hopes it will undercut West European support for SDI. But Moscow is probably also concerned that EUREKA will boost Western Europe's military capability, and is not likely to take a definitive stand until the nature of the program becomes clearer. In any event, West European governments almost certainly will rebuff any attempts by Soviet Bloc countries to join the program.

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EUREKA: The West European High-Technology Initiative

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French Origins

France proposed EUREKA, an acronym for European Research Coordinating Agency, in mid-April; the proposal clearly was designed and timed to dampen West European interest in the US Strategic Defense Initiative (SDI). Foreign Minister Roland Dumas, in a series of letters, outlined a program for research cooperation in seven high-technology areas—all areas of possible SDI research. The French selected areas of dual-use technology¹—such as high-powered lasers, large computers, new materials, and microelectronics—but stressed the civilian aspects while playing down the military implications of the proposal. A large body of reporting indicates that France and the other West European countries acknowledge the connection between EUREKA and SDI although they publicly portray the two as completely separate programs. []

Adroit French diplomacy has turned what many West Europeans originally considered a premature, poorly thought out proposal into a program to which West European countries are rallying for a variety of economic and political reasons. West European governments believe they will benefit technologically from a joint effort to close the “technology gap”; they also view it as a way to bolster their negotiating position with Washington on participation in SDI research. The main interest of West European governments in SDI is their desire to obtain high-technology spinoffs for commercial use. If they come to believe they will not obtain such spinoffs or if they do not give official approval to SDI because of political or military concerns, they hope EUREKA will serve as an alternative channel for their scientists and high-tech companies to conduct research. The West Europeans all back the EUREKA concept, but they are still at odds on what areas it should cover, who should run it, and how it should be financed. []

¹ Dual-use technology can be used for either civilian or military purposes. While SDI will involve a broad spectrum of dual-use technologies, it is likely that it will focus primarily on a narrow list of high-performance systems for military use. []

Pushing the Concept

France publicly has been promoting EUREKA as a research program independent of SDI, but the research areas it is suggesting would overlap the US program in the seven areas Paris originally proposed. The French believe that US companies eventually will progress to commercial applications of the technology they develop in SDI. They argue, furthermore, that the “technology gap” separating Western Europe from its industrial rivals will widen if nothing is done to counter the US program. France also has expressed publicly the fear that, if Western Europe does participate in SDI research, some of the best West European researchers would be drained away to work on a program that mainly benefits the United States. []

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Paris believes as well that EUREKA will strengthen the West European negotiating position on SDI by providing a cushion West European governments and companies could fall back on if they become dissatisfied with US terms on SDI. The French, consequently, want Western Europe to establish EUREKA before taking a common position on SDI. They are generally skeptical about the potential benefits of joint SDI research with the United States, fearing that West European companies will be mere “subcontractors.” According to the French, only Western Europe as a whole, not individual countries, has sufficient leverage to strike a satisfactory deal with Washington on SDI. While lining up West European support behind EUREKA, the French Government almost certainly will not forbid French firms from taking part in SDI on a company-to-company basis with US firms. Paris, however, probably will encourage French companies through economic incentives to give EUREKA higher priority. []

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EUREKA's Areas of Research

EUREKA's areas of possible research continue to shift as France modifies its original proposal to suit prospective partners. The following 11 research areas—the first seven of which were originally proposed by France and cover areas of SDI research—have been mentioned in various talks among the French and other West European governments. The French, after their initial proposal, increasingly have emphasized that they wish to focus individual projects on civilian applications within these broad areas:

1. Artificial intelligence.
2. High-powered lasers.
3. Large computers.
4. Microelectronics.
5. New materials.
6. Optoelectronics.
7. Space research.
8. Biotechnology.
9. Engineering in extreme environments.
10. Flexible and highly integrated systems.
11. Robotics.

More recent talks among West European government and industry representatives, particularly between the French and West Germans, have focused on five areas:

- **Supercomputers.** France already is working on supercomputers in its Marisis project but probably would be eager to get more funding and West German expertise through EUREKA.
- **Integrated circuits.** Some work in this area already is being done in the EC ESPRIT program, but there is widespread West European interest in expanding research in both gallium arsenide and silicon integrated circuits.
- **Artificial intelligence software.** West Europeans are interested in developing expert systems for the diagnosis of large systems, improving software productivity, and providing multilingual access to data bases.
- **Robotics and computer-aided manufacturing systems.** Fundamental research under ESPRIT is being conducted in this area, but West Europeans

wish to enhance the application of computers to production and quality control systems.

- **Industrial uses of high-powered lasers.** The West Europeans, not wanting to fall behind the United States in this key area of SDI-related research, are discussing research in ultraviolet and infrared lasers.

The British have their own ideas on what EUREKA should cover and proposed the following research areas at the 17 July meeting:

- **Home electronics**—including domestic appliances, entertainment devices, and information processing equipment.
- **Transportation**—including high-speed trains and air traffic control equipment.
- **Communications**—mobile digital radios and post office automation.

- **Factory automation**—taking a system-wide approach to the "factory of the future," embracing such elements as lasers, robotics, and microelectronics.

- **European standards**—creating common standards for high-tech equipment throughout Western Europe, tax incentives for firms operating at the European-wide level, and open government procurement policies.

The research areas the West Germans will propose for consideration on 5 and 6 November in their draft Declaration of Principles on EUREKA appear to be a compromise attempt but leaning toward the British viewpoint. Their proposal would move EUREKA further away from SDI and toward:

- Biotechnology.
- Communications.
- Environmental protection.
- Information technology.
- New materials.
- Production technology.
- Robotics.
- Transport technology.

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ESPRIT and Other EUREKA Precedents

The West Europeans already are coordinating research in several areas that fall within EUREKA. Past efforts in high-technology research have produced mixed results in large measure because of competing national priorities. The European Space Agency (ESA), an 11-member non-EC group established in 1975, developed the Ariane, a series of satellite launchers that now—with the help of heavy subsidies—strongly competes with the US space shuttle. Airbus, developed by a consortium of West European firms with governmental assistance, does well in the international passenger aircraft market. In military technology research, the Independent European Program Group (IEPG) was formed in 1976 to promote defense-industrial cooperation among 12 West European nations. The IEPG has not been wholly successful in fostering European-wide cooperation. It has facilitated bilateral and multilateral arrangements among its members in such cases as the Tornado combat aircraft, but the five countries considering cooperation on a new European Fighter Aircraft (EFA) struggled for over a year and were unable to come up with a satisfactory compromise on program leadership and aircraft design. [redacted]

The European Strategic Program for Research in Information Technologies (ESPRIT) covers several areas of potential EUREKA research: microelectronics, office automation, software technology, information processing, and computer-integrated manufacturing. Although ESPRIT is an EC program concentrating on precompetitive research, some of the problems that have arisen in its early stages almost certainly would affect EUREKA. The most significant are the inability of participating firms to cooperate within the program when they are fierce competitors outside it and the intrusion of political considerations in areas like the appointment of personnel and the setting of project goals. The West Europeans also are conducting a small biotechnology research program within the EC, and EC research ministers recently initiated the Research and Development in Advanced Communications for Europe (RACE) program in telecommunications. The program for Basic Research in Industrial Technologies for Europe (BRITE) is designed to apply new technology to traditional industries. [redacted]

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France, meanwhile, continues to push EUREKA. Mitterrand has pledged \$115 million for EUREKA despite the government's austerity program, but it is not clear how much of this total will come from already budgeted research funds. Paris has named Yves Sillard, a former head of its space agency, to organize EUREKA activities in France, and, according to US Embassy reporting, Research Minister Hubert Curien is playing a prominent role in the program. Curien recently hosted a conference with representatives from 34 French firms to drum up support for EUREKA. [redacted]

probably will try to maintain its edge by pushing for a EUREKA structure that will give the major governments control of the program, thereby allowing it a determining voice in deciding with which foreign firms French companies will share technology. [redacted]

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France even may seek to involve US companies in selected EUREKA projects after the program is set up. [redacted]

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West European Reactions

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Paris still may have trouble getting French companies to cooperate fully on EUREKA with their main West European rivals. Attempts at joint research in the past have been hampered because research partners view each other as competitors. France, which sees itself as generally more technologically advanced than other West European countries except for West Germany,

France's potential partners were caught offguard by the substance and timing of the original EUREKA proposal. Bonn and London reacted coolly at first, emphasizing that another expensive West European

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bureaucracy was not needed. They also did not wish to be put in the position of having to choose between EUREKA and SDI. [REDACTED]

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Paris has demonstrated some flexibility in its efforts to gain support for EUREKA, but its West European partners still are suspicious of French motives. Responding to West German and British objections, France dropped the idea of a new "agency" in favor of a more informal and less expensive approach and also distinguished EUREKA from SDI by broadening the proposed areas of research to include some solely civilian-oriented technologies. Although all major West European countries publicly affirm that they now see no conflict between participating in EUREKA and SDI, Bonn and London probably still fear that Paris is trying to control EUREKA and make it competitive with SDI by proposing military-related research projects. [REDACTED]

The Kohl government remains divided on when and how West Germany will take part in SDI, but diplomatic reporting suggests that most West German officials no longer see EUREKA as a threat to participation in the US program. Some West German officials probably are looking at EUREKA more favorably for political reasons and because of doubts that West Germany will benefit technologically from SDI. [REDACTED]

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The main challenge EUREKA presents to the United States at the present time is more political than technological. Most West European leaders do not object to the United States' conducting SDI research, but participation in such research is a more controversial issue for them. While Prime Minister Thatcher and Chancellor Kohl are seeking a role in the US program, their political opponents have latched on to EUREKA as a better way to promote West European high-tech research because of its civilian approach. For example, Johannes Rau, the next Social Democratic Party candidate for chancellor, publicly has stressed his preference for EUREKA over SDI. If the West Europeans feel dissatisfied with US terms on SDI, opponents of the US program are likely to criticize its supporters as being too subservient to US policy. [REDACTED]

The degree of final West German support for EUREKA probably depends heavily on whether Bonn comes to an agreement with Washington on taking part in SDI. Some key West German supporters of SDI were undercut initially by what was perceived in Bonn as US inability to provide timely details on the goals of SDI and the role the West Europeans would play in it. Following two visits to Washington by Horst Teltschik, Kohl's closest adviser on foreign policy issues, however, some of the concern West German officials had about the commercial use of SDI technology apparently has been relieved. Bonn is likely to continue talks with Washington and come to a decision on a government-to-government arrangement near the end of the year. If Bonn still retains doubts about obtaining high-tech spinoffs from SDI, however, and, if these doubts persist, its commitment to EUREKA almost certainly will become stronger. Research Minister Heinz Riesenhuber has stated that

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West Germany—Willing but Cautious

Bonn is ready to play a primary role in and provide limited funding for EUREKA while giving private West German firms the go-ahead to participate in SDI research. West German officials, however, are skeptical about EUREKA and want to wait for the selection of definite projects before making a firm financial commitment. [REDACTED]

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***West European Views of the
Strategic Defense Initiative***

West European leaders are generally skeptical of the SDI concept. In the long term, they fear it could lead to a decoupling of Western Europe's security from that of the United States, fuel the arms race, and undermine prospects for the Geneva arms control talks. The French and British worry that SDI may prompt the Soviet Union to accelerate its ballistic missile defense research and eventually render their independent nuclear forces useless. Such speculation makes it more difficult in the short term for the Thatcher and Mitterrand governments to press forward with expensive nuclear force modernization programs. The British, Italian, Belgian, Dutch, and West German Governments no doubt also are concerned that SDI advocates' questioning of the morality of deterrence provides ammunition to opponents of intermediate-range nuclear forces (INF) in their countries.

Despite these doubts, West European governments also realize that Washington is serious about pursuing the strategic defense concept and that SDI research will provide the United States with a significant technological boost. The West Europeans fear that, if they do not participate, they will have no say in the future course of SDI and will fall further behind the United States and Japan in advanced technology.

West European governments probably will seek to reconcile their dilemma on SDI by allowing their firms to participate in research while avoiding a formal endorsement of the strategic defense concept. During the next few months, London and probably Bonn will focus on negotiating government-to-government framework agreements with Washington to regulate participation by their firms in the US research effort. Rome,

satisfied that existing agreements with the United States are adequate to cover participation in SDI research.

Firms in the United Kingdom, West Germany, France, and Italy are likely to be useful to the SDI research effort in such areas as sensors, optics, lasers, and new materials.

West German officials remain divided over the timing and extent of West German participation in SDI research, but even those favoring a "go-slow" approach agree that the government can and will do nothing to prevent West German firms from taking part. London, for its part, is seeking an agreement with Washington that will demonstrate its "special relationship" with the United States by ensuring a two-way flow of SDI-related technology and securing a hefty share of contracts for British firms. The Italians initially were concerned that they would not obtain a significant share of SDI contracts. In recent discussions with US officials, however, Rome has indicated that it favors participation in SDI research and may announce its decision later in the year.

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expectations of vast commercial spinoffs from SDI are overblown. Many West German officials, furthermore, are not yet fully convinced that satisfactory terms on the sharing of technology can be worked out to allow them to obtain spinoffs even if they are technically possible. Given the enthusiasm of West German industry for a role in SDI research and the continuing discussions between West German and US officials, West Germany almost certainly will try to steer EUREKA away from areas directly competitive with SDI for the time being.² [REDACTED]

United Kingdom—EUREKA Should Stress Marketing

The British Government has approved EUREKA in principle but, according to diplomatic reports, is reluctant to make further commitments until West European governments agree on the program's structure and research areas. It wants to go slowly on EUREKA and is inclined to let private firms take the lead in formulating and financing projects. The British are trying to move the program away from pure research toward commercial applications of new technologies for industry and consumers. They favor making EUREKA an umbrella organization that would coordinate and develop commercial applications for national and multilateral research programs already under way. They also would open West European national markets by eliminating trade barriers. [REDACTED]

London is treating EUREKA and SDI separately because it does not want EUREKA to be viewed as an alternative to SDI or to hold up industrial participation in the US program. The Thatcher government is letting British companies pursue SDI contracts and is close to a government-to-government agreement with the United States that it hopes will ensure technological benefits from SDI for British industry. The British are proposing research areas for EUREKA that do not parallel SDI because they wish to avoid duplication of research between the two programs. [REDACTED]

Italy and Spain—Looking To Gain From EUREKA and SDI

Italy and Spain strongly support EUREKA as a way to promote West European cooperation and give a needed boost to high technology in their countries. Rome, like London, is considering participation in EUREKA and SDI separately. Several Italian high-tech firms already have formed a consortium to pursue links with US companies that are likely to work on SDI research. Rome, we believe, realizes that, in general, Italian firms do not have the technological expertise to expect more than a subcontractor role on SDI and, therefore, is likely to be less demanding than the larger West European countries on technology-sharing arrangements. Some Italian industrialists probably believe their companies have a better chance of obtaining marketable products from a civilian-oriented program, but they still do not want EUREKA to interfere with their participation in SDI research. Rome's primary aim in EUREKA at this time is to make sure that the larger West European countries do not dominate and reap all the benefits from the program. [REDACTED]

The Spanish, according to diplomatic reporting, see EUREKA as an opportunity to forge new links and catch up technologically with the rest of Western Europe. They are skeptical of the gains they can derive from SDI, except in a few selected areas such as communications, for example, because they fear SDI technology is too advanced for their firms to use commercially. Madrid, nevertheless, is still likely to give Spanish companies the green light to move forward on the US program, while concentrating its own efforts on EUREKA. [REDACTED]

Small Countries—More Support for EUREKA

Most of the smaller West European countries are interested in taking part in EUREKA to advance civilian technology in their countries while avoiding the controversial military aspects of SDI. US Allies with strong anti-SDI lobbies—Belgium and the Netherlands—want a coordinated West European response on SDI; while they probably will allow industrial

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participation in SDI, they will focus government attention on EUREKA as a politically more acceptable program. Denmark, which has declined to participate in the SDI program, is formulating several project proposals for EUREKA. Non-EC countries unlikely to take part directly in SDI but which may permit some industrial participation in the US program—Austria, Norway, and Switzerland—see EUREKA as a forum they can join to promote high technology. Those countries that reject SDI outright due to their neutral status—Finland and Sweden—believe that the expressed public commitment of EUREKA to civilian goals has eased considerably their entry into the program. []

EUREKA's Framework Unsettled

Despite widespread support for EUREKA, West European governments still are debating what form the program should take. On 17 July foreign and research ministers from the 10 EC countries, EC members-to-be Spain and Portugal, and non-EC countries Austria, Finland, Norway, Sweden, and Switzerland failed to settle on a framework or funding scheme for EUREKA and made little headway on the research areas the program should cover. The ministers confirmed—at the urging of the neutral countries—that EUREKA will have a “civilian” nature. They also agreed to continue discussions on financing the program and to form a “high-level group” of experts to solicit and evaluate ideas from industry on research projects in preparation for another meeting of foreign and research ministers in November. []

EUREKA and the EC—An Awkward Mix

While most West European governments appear to favor a project-by-project approach to EUREKA with flexible participation rules, they probably want to wait until the institutional character of the program is more clearly defined before making a final commitment on funding. West Germany, France, and the United Kingdom prefer to keep it out of the EC framework to give their governments more control over the program, to prevent the creation of another large EC bureaucracy, and to ease the entry of non-EC West European countries into the program. Italy,

Spain, and most of the smaller EC countries, on the other hand, prefer an EC forum for EUREKA, or at least a prominent EC role, because they fear they otherwise will be cut out of EUREKA's decisionmaking process. []

The EC has endorsed EUREKA, but the EC Commission does not want it to undercut, financially or politically, current EC research programs. The Commission, consequently, has proposed its own program for high-tech cooperation, calling for the creation of a European Technology Community. Commission President Jacques Delors probably offered the proposal because he felt EUREKA was becoming dominated by the major West European countries, primarily France and West Germany. Although West European leaders publicly endorsed the Commission's proposal, they have done nothing to reconcile it with EUREKA and, privately, the major countries threw cold water on the scheme. France, West Germany, and the EC Commission, meanwhile, have worked out an arrangement that will give the EC a role in, but not control of, EUREKA. We believe, nonetheless, they will have trouble getting the smaller countries on board unless the link between EUREKA and the EC is strengthened. []

Corporate Reaction Mixed

EUREKA has thus far attracted the attention of several well-known West European high-tech firms. These firms all have the capability to contribute to either SDI or EUREKA. Their decisions to take part in EUREKA represent various degrees of commitment, several being contingent on government funding assistance:

- Siemens of West Germany, Philips of the Netherlands, the General Electric Company (GEC) of the United Kingdom, and Thomson of France, all major electronics firms, have agreed in principle to collaborate on several microelectronics projects.

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West European Companies in EUREKA

	Companies	Employees	1983 Sales	Comment
France	Aerospatiale	40,000	\$3.2 billion	Leading French aerospace company and producer of military and civilian aircraft; also manufactures missiles, helicopters, and space systems; working with MBB on a communications satellite, several missile systems, and an antitank helicopter.
	Bull	25,000	\$1.5 billion	State-owned manufacturer of mid-sized and large computers; more recently involved in office automation and microcomputers; heavily patronized by French Government; main contractor on French Isis and Marisis supercomputer projects.
	Compagnie Generale d'Electricite (CGE)	150,000	\$7.5 billion	Diversified state-owned electronics firm with interest in electromechanical engineering and electrical construction; recently expanding interest in telecommunications and data processing.
	Matra	30,000	\$1.2 billion	Manufacturer of arms systems, missiles, space launchers, satellites, and optical equipment; state controlled; prime contractor for development and production of Ariane launcher; contractor on Spacelab project; predominantly military work but trying to expand civilian sector.
	Thomson	130,000	\$7.4 billion	Manufacturer of a wide range of electronics products including consumer electronics, medical equipment, and electronic components; 60 percent of sales from Thomson-CSF subsidiary, which produces avionics equipment, radar, radio and television equipment, and data-processing equipment.
West Germany	Danet	50	NA	West German subsidiary of CGE; markets computer-related services particularly in the areas of computer programming and software services.
	Siemens	315,000	\$14.5 billion	West Germany's largest electrical and electronics firm; largest computer and telecommunications company outside the United States and Japan; only European supplier of most advanced memory chip in commercial production; participating in Megaproject with Philips to close gap in microchip technology; expanding data-processing interests and work on gallium arsenide microchips.

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West European Companies in EUREKA (continued)

	Companies	Employees	1983 Sales	Comment
	Messerschmitt-Boelkow-Blohm (MBB)	35,000	\$2.2 billion	Manufacturer of military and civilian aircraft; also produces helicopters, missiles, and space systems; member of Airbus consortium; responsible for integration and testing of Spacelab; producer of space satellites.
United Kingdom	General Electric Company (GEC)	170,000	\$7.0 billion	Manufacturer of electric appliances, power-generating equipment, motors, and engines; also produces lamps and lighting equipment; manufactures measuring equipment.
	Plessey	40,000	\$1.8 billion	Manufacturer of electronic and telecommunications equipment for civilian and military applications; also produces electronic components, avionics equipment, military communications systems, and underwater defense equipment.
Netherlands	Philips	345,000	\$15.0 billion	Western Europe's largest electronics firm; last major West European manufacturer of home electronic equipment; also manufactures lighting equipment, telecommunications equipment, and electronic components; participating with Siemens in Megaproject to catch up in microchip technology.
Italy	Italtel	15,000	\$600 million	Manufacturer of telephone and telegraph equipment including teleprinting equipment, alarm equipment, cables, and wires.
	Techint	400	\$60 million	State-owned firm specializing in chemicals.
Belgium	Societe Generale de Belgique (Soc Gen)	100	\$25 million	Holding company with broad range of interests including metals, banking, energy, diamonds, chemicals, iron and steel, and shipping; recently joined with CGE to convert Ateliers de Construction Electrique de Charleroi (ACEC) from heavy engineering firm to concentration on telecommunications, robotics, and biotechnology.
Norway	Norsk Data	2,000	\$115 million	Computer company with subsidiaries in seven other European countries; designs, manufactures, sells, and services general purpose medium-sized computers and computer systems.

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- Aerospatiale of France and Messerschmitt-Boelkow-Blohm (MBB) of West Germany, prominent in military technology and aeronautics, have agreed to conduct joint research on aerodynamics and new materials.
- Matra of France and MBB have signed two agreements, one on data transmission by laser and the other on a computerized information network.
- Siemens and Bull of France recently have committed \$200 million to develop jointly a supercomputer.

Despite the possible participation of these companies in EUREKA, West European industrial interest in SDI research is stronger because business leaders perceive a firmer financial commitment behind the US program. Business leaders also see the possibility of valuable technological spinoffs from SDI research while they are skeptical about EUREKA's possible benefits. West European government officials expect industry to provide much of the funding for EUREKA research, but companies see SDI as an opportunity to be fully paid for their research. Officials from several firms that publicly have shown interest in EUREKA are privately skeptical about the program and fear it could prove an obstacle to participation in SDI research. The major electronics firms, including Siemens and Thomson, want a substantial government contribution as a condition for joining EUREKA. Their interest in SDI, meanwhile, is growing. Siemens has offered to take part in SDI research through its US subsidiaries if it cannot do so directly.

MBB, Matra, and Plessey see SDI research as a way to break into the large US defense market. Of the major West European high-tech firms involved in EUREKA, only Philips has indicated a clear preference for EUREKA over SDI research, while Aerospatiale's attitude on the relative merits of the two programs remains unknown.

Implications for SDI

We believe that Western Europe will not be able to come up with enough funding for EUREKA to dampen industrial interest in SDI or compete with it over a broad range of projects. EUREKA would have the potential to compete with SDI for manpower and resources in a limited number of areas, however, if the West Europeans focused on a small number of well-funded, clearly defined projects. The degree of competition will depend, of course, on what projects EUREKA in its final form includes. Its focus almost certainly will remain civilian but competition may develop in areas of dual-use technology. Although West European companies generally lag the United States in the technology needed for SDI research, there are centers of advanced technology in Western Europe, including several companies that may take part in EUREKA, that could contribute technologically to the US effort. Thomson and Siemens, for example, are conducting advanced research in gallium arsenide integrated circuits. Aerospatiale and MBB are at the leading edge in advanced composite materials. Matra could make contributions in laser research, GEC and Philips in sensor technology, and Plessey in communications.

Soviet Interest

The Soviet Union almost certainly has mixed feelings about EUREKA. On the one hand, we believe Moscow sees EUREKA as a way of thwarting West European participation in SDI. General Secretary Gorbachev, in talks with Italian Prime Minister Craxi on 29 May, commended the EUREKA initiative provided it serves only peaceful purposes. Gorbachev took no firm public stand on EUREKA during his recent trip to France but probably sought private assurances from President Mitterrand that EUREKA is strictly a civilian program. On the other hand, Soviet leaders would be disturbed by any program—even one ostensibly with civilian goals—that promises to improve Western Europe's capabilities in dual-use technologies.

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The Soviets probably also view EUREKA as a significant potential source of advanced technological information, although the West Europeans almost certainly will not ask or allow any Soviet Bloc countries to join. Moscow probably does not want to complicate the task of setting up EUREKA by pressing for East European participation at this time. After EUREKA is established, however, the Soviets may encourage their allies to seek membership. If they are turned down, as they almost certainly would be, Moscow probably would try to cast doubt that the program truly is civilian. If they are accepted, Soviet Bloc countries could pass along EUREKA technology to the Soviets. East Germany and Hungary already have signaled their interest in taking part. The Soviets, in any event, probably will tap EUREKA for technical data by targeting participating companies for clandestine collection. []

Outlook

We believe Western Europe will continue to move ahead with EUREKA and that the program in its final form will have broad West European membership but will depend largely on voluntary participation in specific projects. Differences will persist among West European governments on the program's structure, funding, and research areas making progress slow and difficult. EUREKA, meanwhile, gives West European leaders a political alternative to SDI. If they are not satisfied with US terms on SDI or if political pressure or military concerns prevent them from officially approving SDI research, they can turn to EUREKA to step up the collective effort to improve West European technology. EUREKA, nevertheless, will not be an adequate alternative to SDI research for West European industry unless West European governments move faster on the program's goals and funding. []

EUREKA's eventual form and funding depend partly on the decisions that West European governments, particularly West Germany and the United Kingdom, make on SDI research. If Bonn and London give firms the official go-ahead to participate in SDI research by reaching government-to-government agreements with Washington, we expect EUREKA to be developed

with the primary aim of improving West European technological capability in selected areas rather than drawing away firms and researchers from SDI. France wants and probably needs the financial backing and technological expertise of West Germany and the United Kingdom to make EUREKA credible. Bonn and London would be unlikely to join a program that would seek to undercut SDI if their own companies were participating heavily in the US effort. []

If, on the other hand, Bonn and London decide not to forge official links to SDI, they probably will try hard to make EUREKA a success by providing, along with the other West European countries, substantial funding, possibly funneling resources away from existing research programs. EUREKA, in this case, would have a greater potential for attracting firms and scientists who could otherwise contribute to SDI research. The interest of West European companies in EUREKA as a source of subsidies and a forum for advancing technology through cooperative research would heighten. These companies, moreover, probably would be wary of taking part in the US program without the overarching government-to-government agreements that would ensure their ability to share in the commercial benefits of SDI technology. []

EUREKA, in our judgment, will have difficulty advancing West European technological capability in the longer term. Funding difficulties and the lack of an integrated West European market are likely to be major obstacles. Whether EUREKA is inside or outside the EC, funding probably will become an annual battle as governments try to give priority to national programs or their favorite EUREKA projects. The West Europeans are trying to move closer to the single home market necessary for commercial success by linking EUREKA to several market-opening measures such as common West European standards for high-tech equipment, financial incentives for companies operating beyond their national borders, and the reduction of conflicting national legal and administrative regulations that now inhibit cross-border trade even in the EC. Enacting these steps, however, will take time. []

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Even if the West Europeans do agree to provide EUREKA with substantial funding, we expect them to have difficulty narrowing the "technology gap" given the mixed results of their past efforts in joint high-tech research. Western Europe has fallen behind in a broad range of technologies, and its leaders are particularly concerned about the lag in microelectronics and computers. West European companies probably could benefit greatly by assimilating US and Japanese technology through joint ventures and cooperative research programs. If the West Europeans stress, instead, joint research exclusively among their own companies, they probably could make progress only in various niches of the high-tech market while continuing to fall behind in high technology generally. EUREKA, in any case, is unlikely to get the resources to catch up on a large scale and almost certainly will not overcome completely the problems inherent in trying to get companies to cooperate when they are fierce competitors outside the program.

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Appendix

EUREKA's Calendar

17 April	France proposed EUREKA in a series of letters from Foreign Minister Dumas to other West European governments outlining a program for research cooperation in several areas of dual-use technology. The initiative came less than one month after Defense Secretary Weinberger's invitation to the West European Allies to take part in SDI.
22-23 April	EUREKA received a cool reception when Dumas brought it up informally at a meeting of the Western European Union (WEU) in Bonn. Foreign and defense ministers mainly focused on developing a West European response to SDI and postponed consideration of EUREKA until the French could provide more details.
23 April	French Research Minister Hubert Curien introduced EUREKA at a meeting of EC research ministers in Rome. The ministers responded that a new agency would weaken the EC role in high-tech research.
3-4 May	Bonn Economic Summit. President Mitterrand, prior to the summit, ruled out discussion of EUREKA claiming it was purely a European matter. At the summit, Mitterrand rebuffed the US invitation to take part in SDI partly as a counter-weight to Chancellor Kohl's perceived enthusiastic backing of the US program.
23 May	Kohl and Mitterrand met at Lake Constance in West Germany. They agreed to continue discussions on EUREKA but failed to resolve their differences on SDI.
4 June	EC research ministers discussed EUREKA and gave preliminary support to the concept of more high-tech cooperation at a meeting in Luxembourg devoted mainly to the launching of a telecommunications initiative.
8-9 June	EC foreign ministers agreed at their informal meeting in Stresa, Italy, that EUREKA and West European high-tech research cooperation should be topics of discussion at the EC summit later in the month.
13-14 June	Mitterrand and Italian Prime Minister Craxi discussed EUREKA during their meeting in Florence. Mitterrand stressed French openness to suggestions on the proposal, and Craxi backed a strong EC role in the program.
24 June	The EC Commission announced an initiative to create a European Technology Community. The proposal, heralded four days earlier by Commission President Delors, covered areas similar to those considered for EUREKA.
28-29 June	Milan European Summit. West European leaders endorsed EUREKA and the European Technology Community. They chose to move forward, however, only on EUREKA and pledged to open it to some non-EC countries. They also requested that France convene a meeting of research ministers within a month to develop the proposal further.

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17 July	Foreign and research ministers from the EC countries, EC members-to-be Spain and Portugal, and non-EC countries Austria, Finland, Norway, Sweden, and Switzerland formally launched EUREKA at a meeting in Paris. They agreed to form a "high-level group" to work on the research areas and financial arrangements for the program. They also agreed to meet again in West Germany in November to refine EUREKA and its objectives further.
24 August	Mitterrand and Kohl met in southern France. Their differences on SDI remained unresolved, but they agreed to a meeting of French and West German research experts in the near future to work out a common approach on EUREKA.
29 August	Research experts from West Germany, France, and the EC Commission met in Paris and worked out a draft Declaration of Principles for EUREKA to be presented at the ministerial meeting in November. They also made some progress in formulating a common position on the program's structure.
10 September	French Research Minister Curien met with representatives from 34 French companies in an effort to explain and drum up industrial support for EUREKA.
18-19 September	The "high-level group" of West European officials met and began consideration of specific proposals as well as the criteria for selecting projects.
2-5 October	Soviet General Secretary Gorbachev met Mitterrand in Paris to discuss East-West relations. Gorbachev expressed a guarded attitude on EUREKA and publicly stated that he was seeking to determine whether EUREKA is strictly a civilian program.
14 October	Representatives from West European industry and financial institutions met in London to discuss the possibilities of private funding for EUREKA. The financial experts made no commitments on funding but suggested that governments grant tax breaks and set technical standards for companies taking part in the program.
15 October	EC research ministers met in Luxembourg. They reviewed progress on setting up EUREKA but deferred to the "high-level group" on developing the program further.
16-17 October	The "high-level group" of research experts met again in Bonn to develop a list of projects and discuss the draft Declaration of Principles for EUREKA.
5-6 November	Foreign and research ministers from the countries that participated in the July meeting plus Turkey will reconvene in Hannover, West Germany. They will try to lay the groundwork for EUREKA by establishing its formal structure and preliminary financing. They also will attempt to develop a list of projects on which to move forward.



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